REMARKS

It is respectfully submitted that the present response presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the following remarks is requested.

I. Priority

Applicants acknowledge with appreciation the Examiner's statement in the July 23, 2010 Office Action that the claims are entitled to the benefit of both US 60/515,000 and DK 2003 01562. Applicants respectfully submit, however, that the filing date of DK 2003 01562 is October 23, 2003 rather than October 28, 2003 as stated in the Office Action. Acknowledgement of the same in the next Office Communication is respectfully requested.

II. The Rejection of Claims 46-59 and 62-64 under 35 U.S.C. 102

Claims 46-59 and 62-64 remain rejected under 35 U.S.C. 102(b) as allegedly being anticipated for the same reasons as previously recited for claims 29-39 and 42-43. To summarize, the claims stand rejected as allegedly anticipated by Isono et al., USPN 3,655,570 ("Isono et al.") as evidenced by Isono et al. and Esaki et al., Arch. Microbiol., 161:110-115 (1994) ("Esaki et al."). In particular, in the outstanding and prior Office Actions, relying on Example 6/Table 5 of Isono et al., the Examiner states that Isono et al. teach an alkaline protease isolated from *Fusarium solani* (IFO 5232) that shows activity in a detergent composition. Esaki et al. is cited to support the proposition that Isono's *F. solani* alkaline protease has thermostability since an aminotransferase from *F. solani* has thermostability. The Examiner acknowledges that Isono et al. provide no characterization of the proteases isolated from *F. solani*, and states that no evidence was provided that any of the proteases isolated from *F. solani* were alkaline proteases. The Examiner further states that the evidence provided in Table 5 of Isono et al. was obtained using a culture supernatant, which would contain all proteases produced by the *F. solani*, which is the strain used by Applicants. Therefore, the Examiner concludes, the skilled artisan would believe that, more likely than not, one or more of Isono's proteases isolated from F. solani strains is the same as the protease of SEQ ID NO: 2 now claimed by Applicants.

Moreover, the Examiner states that Applicants' prior arguments and the DECLARATION OF DR. JÜRGEN KNÖTZEL UNDER 37 CFR 1.132 on 21 January 2011 ("January 2011 Knötzel Declaration") have been considered but are not persuasive. In particular, the Examiner states that the statements and results of the January 2011 Knötzel Declaration cannot be evaluated because

it is not clear that the concentration of LAS used by Isono et al. was the same as used in the experiments of the January 2011 Knötzel Declaration. The Examiner further states that the results of the January 2011 Knötzel Declaration call into question the utility of the detergent composition and method claims of the present invention.

This rejection is respectfully traversed.

The Isono et al. patent, which is assigned on its face to Takeda Chemical Industries, Ltd., discloses cultivation of strains of alkaline protease-producing microorganisms belonging to the genus Fusarium. *Fusarium solani* (IFO 5232) and *Fusarium sp.* S-19-5 (IFO 8884) are described as typical microorganisms producing the alkaline protease. See generally, Isono et al., col. 2, lines 30-44.

As a preliminary matter, Applicants acknowledge with appreciation that the Examiner no longer appears to maintain a rejection of the instant claims on the basis of Isono et al.'s disclosure of *Fusarium sp.* S-19-5 (IFO 8884).

With regards to the Isono et al. disclosure of *Fusarium solani* (IFO 5232), Applicants incorporate by reference in the entirety their prior arguments traversing the rejection, and provide the following additional comments, as well as the Supplemental Declaration of Dr. Jürgen Knötzel Under 37 CFR 1.132 ("Supplemental Knötzel Declaration") submitted herewith.

As set forth in the Supplemental Knötzel Declaration, "the concentration of LAS detergent in the assay experiments carried out under my direction and supervision is the same as the concentration of LAS detergent in the assay experiments of Isono." Supplemental Knötzel Declaration, Paragraph 5. In particular, the final concentration of the assay performed according to the experiments of the January 2011 Knötzel Declaration is 0.0625% (0.625mg/ml) LAS, and the final concentration of the assay reported in Example 4 of Isono is also 0.0625% (0.625mg/ml) LAS (i.e., 5 mg of 25% LAS solution taken in 2 mL of buffer). Supplemental Knötzel Declaration, Paragraphs 3-4.

In view of the above, Applicants respectfully request the Examiner's reconsideration of the arguments of the prior response, as well as the experiments of the January 2011 Knötzel Declaration as further evidenced by the Supplemental Knötzel Declaration.

In particular, Example 6 and Table 5 of Isono et al. state that "[i]n the same manner as in Example 1," *F. solani* (IFO 5232) is cultivated, the culture is centrifuged to give supernatant fluid which is used as an enzyme solution, and enzyme activity with and without detergent is demonstrated from this alkaline protease-producing microorganism. See Isono et al., Example 6 and Table 5 (col. 7, line 41 to col. 8, line 5, reproduced below for the Examiner's convenience). In

particular, Table 5 at col. 7, lines 68-69 demonstrates that protease activity is measurable in an *F. solani* fermentation broth both in the absence of and in the presence of LAS-detergent.

EXAMPLE 6

In the same manner as in Example 1, several microogranisms belonging to the genus Fusarium and the genus Gibberella are cultivated for 6 days.

The cultures are then centrifuged to give supernatant fluids which are used as enzyme solutions. To 2,000 parts by volume each of the enzyme solutions are added 5 parts by weight of the LAS-detergent described in Example 4, and protease activity of the resulting solution is determined by the specified assay method. The results are set forth in Table 5 indicating that the LAS-detergent does not inhibit any activity of the enzymes produced by those alkali protease-producing microogranisms.

TABLE 5

Mircoogranism	Enzyme Activity (PU/ml) with detergent	without detergent
Fusarium oxysporum (IFO 5942) (ATCC 659)	200.8	199.2
Fusarium oxysporum f. lini (IFO 5880)	550.5	553.8
Fusarium oxysporum f. niveum (IFO 4471)	315.8	307.2
Fusarium solani (IFO 5232)	230.2	235.0
Gibberella fujikuroi (IFO 5268)	73.2	75.6
Gibberella saubinetti (IFO 6608) (ATCC 20193)	530.2	523.4

Isono et al. characterize the results of Table 5 as "indicating that *the LAS-detergent does not inhibit any activity* of the enzymes produced by those alkali protease-producing microorganisms." See col. 7, lines 51-54 (emphasis added). Indeed, the enzymes produced by F. solani (IFO 5232) show enzyme activity of 230.2 PU/mL with detergent as compared to 235.0 PU/ml without detergent. In other words, *the proteases of the* F. solani *(IFO 5232) have essentially 100% residual activity in the presence of the LAS-detergent of Isono et al.*

In direct contrast, as determined in the January 2011 Knötzel Declaration, *the* F. solani *protease of SEQ ID NO: 2 has essentially no activity in the presence of the LAS-detergent of Isono et al.* In other words, *the LAS-detergent of Isono et al. inhibits any activity* of the claimed trypsin-like protease. See, January 2011 Knötzel Declaration, Paragraph 8.

The results outlined in the January 2011 Knötzel Declaration were obtained by reproducing the experimental protocol of Isono et al. and testing Applicants' claimed protease in the presence of LAS-detergent. As noted in the January 2011 Knötzel Declaration and in the Supplemental Knötzel Declaration, LAS-detergent (also called Detergent 1) was prepared according to Example 6 and Table 1 of Isono et al. in order to include 25% of LAS (surfactant), 40% sodium tri-phosphate, 29% sodium sulphate, 5% sodium silicate and 1% carboxymethyl cellulose. Compare Supplemental Knötzel Declaration, Paragraphs 3-4 and January 2011 Knötzel Declaration, Paragraph 5 with the ingredient listing of Table 1 of Isono et al.

The activity of the claimed *F. solani* trypsin protease of SEQ ID NO: 2 and of a control trypsin protease known to have activity in the presence of LAS-detergent was then evaluated in the presence of TRIS pH 11 buffer and in the prepared LAS-detergent following the experimental protocol of Isono et al. The control trypsin protease is from the same family (S1A) as the *F. solani* trypsin protease, is known to have wash performance in LAS-containing detergents, and was included in order to see at which concentrations a trypsin protease would work in the Isono assay, because it is not clear at which concentration the proteases are measured in Isono et al. January 2011 Knötzel Declaration, Paragraph 6.

The results of the experiments are set forth in Paragraph 7 of the January 2011 Knötzel Declaration. As set forth in Tables 3-4 and Figure 1 of Paragraph 7, Trypsin *Fusarium solani* of the patent application in LAS-detergent showed no activity when tested at the same concentrations as those that showed a high level of activity in 0.05 M Tris-buffer. Even at a 10-fold concentration increase of *F. solani* trypsin-like protease, essentially no activity was seen in the presence of LAS-detergent. January 2011 Knötzel Declaration, Paragraph 7. Therefore, Applicants' claimed protease is not the same as the proteases of the *F. solani* (IFO 5232) of Isono et al.

Moreover, if Applicants' claimed protease was a component of Isono et al.'s material, as the Examiner alleges, Isono et al.'s material would have lost at least some activity in the presence of LAS-detergent, since Applicants' enzyme is not active in the specific LAS-detergent composition according to Isono et al. However, as Isono et al. states, the LAS-detergent does not inhibit any activity of the enzymes produced. Accordingly, whatever it was that Isono et al. assayed, it did not include Applicants' claimed trypsin-like protease of SEQ ID NO: 2.

For all of these reasons, as well as the reasons articulated in Applicants' prior responses (incorporated by reference herein), one of skill in the art would not conclude that the protease

produced from *F. solani* (IFO 5232) in Isono et al. is the same as the protease of SEQ ID NO: 2. Thus, Isono et al. does not teach or suggest the pending claims.

Finally, Applicants also wish to address the Examiner's statement that "the results of the Knötzel Declaration call[] into question the utility of the inventions recited in Claims 59-61 herein, i.e., detergent compositions and methods of using detergent compositions." Applicants respectfully disagree. One of skill in the art will recognize that the protease of SEQ ID NO: 2 of the present invention is more stable in different detergents compared to other known proteases as demonstrated by, e.g., Example V at pp. 42-43 of the specification as filed, and is stable in a wide range pH from pH 4 to pH 10 as demonstrated by, e.g., Example IV at pp. 41-42.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 102(b). Applicants respectfully request reconsideration and withdrawal of the rejection.

III. The Rejection of Claim 60 under 35 U.S.C. 103

Claim 60 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Isono et al. in view of Hastrup et al., USPN 5,702,934 ("Hastrup et al.") or Okuda et al., US Publication 2004/0002432 ("Okuda et al.") for the reasons of record regarding the rejection of prior claim 44. This rejection is respectfully traversed.

As explained in detail above, Isono et al. does not teach or suggest the claimed proteases.

Hastrup et al. discloses proteases. However, Hastrup et al. does not disclose Applicants' claimed proteases, and does not teach or suggest detergent compositions comprising the proteases of the present invention, either alone or in combination with Isono et al. and/or Okuda et al.

Okuda et al. disclose a detergent composition comprising an alkaline protease and one or more other enzymes. However, Okuda et al. does not teach or suggest detergent compositions comprising the proteases of the present invention, either alone or in combination with Isono et al. and/or Hastrup et al.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection. This rejection is respectfully traversed.

IV. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to

contact the undersigned by telephone if there are any questions concerning this amendment or application.

All required fees were charged to Novozymes North America, Inc.'s Deposit Account No. 50-1701 at the time of electronic filing. The USPTO is authorized to charge this Deposit Account should any additional fees be due.

Respectfully submitted,

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